

VEHICLE SAFETY AND ALERT SYSTEM

[0001] This application claims priority to U.S. Provisional Patent Application Ser. No. 62/979,201, filed on Feb. 20, 2021, which is incorporated herein in its entirety by this reference thereto.

FIELD OF THE INVENTION

[0002] The present device relates to the safe operation and movement of motor vehicles. More particularly, the disclosed device and system relate to a system and method to automatically actuate sonic and/or illumination alarm components on a vehicle such as those employed for mining and on large construction sites, to provide warnings to proximate personnel and other vehicles of an imminent movement of a vehicle.

BACKGROUND OF THE INVENTION

[0003] Since the invention of motorized vehicles, their movement in proximity to other vehicles, and especially near pedestrians who are working or are situated proximate to such moving vehicles, has created the potential for injury.

[0004] One example highlighting the potential for injury and accidents exists in the mining industry. Conventionally, safety protocols for vehicles operating in the mining industry, require the operator/driver of a vehicle to take multiple actions to warn humans and drivers of other vehicles which are proximate thereto, that movement of the vehicle is imminent.

[0005] To that end, in the mining industry, the driver of a stationary vehicle may be conventionally required to honk the vehicle horn manually upon starting the vehicle. Subsequent to this engine starting warning, prior to driving the vehicle, the driver may be required to again honk the vehicle horn a defined number of times, prior to moving the vehicle in a forward or backward direction.

[0006] Workers on the site are trained to listen for vehicle horns and to count the number of honks sounded by a given vehicle to determine which direction of travel the driver activating the horn intends to proceed. Having been trained to listen and react to the differing numbers of consecutive honks of a vehicle horn, the pedestrian workers and other vehicle drivers who are proximate to the honking vehicle can ascertain the imminent direction the honking vehicle intends to travel and to get out of the way of that discerned path. To communicate an emergency to surrounding drivers and workers, another number of sequential honks is used.

[0007] While different mines and work sites, at different geographic locations, may employ different numbers in a sequence communicating such upcoming vehicle movement, all mines and many large construction sites and the like are required by OSHA and/or MSHA safety regulations to have such a sonic warning program in place and to train workers to understand the communicated horn sequences which warn of vehicle movement.

[0008] However, the actual horn actuation for the numerical sequence is solely up to the operator or driver of each vehicle. Should the required horn sequence not be actuated by a driver or this honking action is not performed prior to every time the vehicle ignition is started, powers forward or powers in reverse, workers proximate thereto are placed in danger. Such a lack of horn actuation in the correct sequence can easily be caused by poorly trained drivers, tired drivers, or negligent drivers. Further, even trained drivers with the

best of intentions can make a mistake in a horn honking sequence. Such occurrences create a massive safety hazard for workers proximate to the vehicle which is about to move, or for drivers of other vehicles who may be listening for horn honks from a vehicle they are approaching.

[0009] Such a sonic warning system, announcing the intended action and movement by vehicle drivers, is widespread in the mining industry, for example. On mining sites which have numerous vehicles, it is common to require the operator of each such vehicle to blast the horn once during the vehicle ignition startup. For running vehicles about to move, it is common to require a horn actuation twice prior to moving the vehicle in the forward direction and three times in sequence prior to moving the vehicle in a reverse direction. Also common is a sequence of four honks to signal surrounding workers and vehicle drivers of an emergency.

[0010] As noted, if the operator fails to perform any of these required horn sequence actuations, the movement of their vehicle can easily result in serious injuries or death of proximate workers who are not alerted to move out of the way if needed.

[0011] A similar safety warning system for intended vehicle movement exists in the commercial delivery industry for drivers of vehicles for services like UPS, DHL, and FEDEX. The danger for such delivery services, however, is not to fellow workers on a job site who are acutely aware of potential vehicle movements. Instead the injury danger is to pedestrians and the general public.

[0012] To that end, a conventionally used warning system for such delivery drivers requires them to actuate the horn twice if they intend to move the vehicle in reverse. Once the vehicle is moving in reverse, the drivers are supposed to actuate the vehicle horn every two seconds during rearward travel. However, this leaves the warning system up to a busy delivery driver who is constantly distracted and may or may not endeavor to follow company policy concerning audible vehicle movement warnings.

[0013] As a consequence, workers and pedestrians, who are proximate to these large vehicles, do so at their own peril because they are trusting that the drivers will adhere to safety protocols to actuate sonic warnings of vehicle movements. Such a conventional warning system creates an unreasonable risk of harm to people who are in harms way, since audible warnings of oncoming vehicles are left to the drivers who may or may not be attentive.

[0014] The forgoing examples of vehicle safety warning systems and the limitations related therewith, are intended to be illustrative and not exclusive. The disclosed examples and background herein does not imply any limitations on the invention described and claimed herein. Various other limitations of the related art of vehicle suspension are known, or such will become apparent to those skilled in the art upon a reading and understanding of the specification below and the accompanying drawings.

SUMMARY OF THE INVENTION

[0015] The device and system herein disclosed and described provides a solution to the shortcomings in prior art in the area of providing sonic warnings to workers and pedestrians who may be in the proximity of motor vehicles having drivers who may not be able to view their surroundings during movement of the vehicle.

[0016] The system, herein, employs a computerized controller running software configured to the task of ascertain-